

Unit 3: Newton's Laws

Newton's Laws:

- 1) Object at rest stays at rest, object in motion stays in motion unless acted upon by an outside force
- 2) $F=ma$
- 3) For every action, there is an equal and opposite reaction (equal and opposite forces)

Vocabulary and Topics:

Inertia

Mass

Weight

Inertial balance

Acceleration

Force

Gravity

Net force

Resultant vector

Newtons (unit)

Normal force

Tension

Friction

Air resistance

Free Body Diagrams (FBD)

Perpendicular and parallel (anti-parallel) forces

Labs:

Newton's Laws stations (penny catch, air drop, etc...)

Inertial Balance

Film Canister Rockets (Epsilon only)

Pumpkin Drop (Epsilon only)

Demonstrations:

Fan powered car with shield

Marble and pacman shaped container

Spring loaded device with falling metal balls

Free Body Diagrams:

Attach tail of vector to object in scenario

Always label with capital F and the appropriate subscript

Do not assume friction is present unless told so

Honors:

Trigonometric Functions:

Sine

Cosine

Tangent